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Seed Corn.

Corn Responds to Selection as Readily as Cattle. There is no longer any doubt that varieties of corn can be further improved by the same methods that have developed our breeds of live stock. Little attention has been given to a systematic study of corn, as regards the adaptation of varieties to peculiar conditions of soil and climate, the breeding out of sterile plants, the adaptation of varieties for particular purposes, as for feeding, starch factories, production of corn oil, human food, or to the fixing of variety characteristics with a standard perfection. Extensive experiments have proved conclusively that corn is subject to great variation and that by taking advantage of these variations by intelligent selection, almost any improvement desired can be brought about. An illustration of the effect of such selection among other plants than Indian corn can be found in the development of the sugar beet. Vilmorin, a French plant breeder, by selecting for growing seed those beets having a higher per cent of sugar than the ordinary field beet, gradually increased the per cent of sugar in the beets from about 3 per cent to 16 per cent making it possible to profitably manufacture sugar from this source.

Highly bred seed corn has been developed. There are at present a few distinct varieties of corn with widely different characteristics which have been developed by careful selection during a quarter to a half century From the fact that we have had no standard of perfection for these varieties, in fact have not known their history or peculiar characteristics, this improvement has been very slow. The University has secured a large number of samples of these established varieties with the object of determining the variety characteristics and making a standard for each variety. When this has

been accomplished, it will be possible to supply pedigrees for these varieties, which must mean, as it has meant in the breeds of live stock, a rapid improvement and fixing of the characteristics of the varieties now in existence. The University is also collecting the authentic history of these varieties as far back as they can be traced.

The specially selected seed corn will never be used to plant the corn fields of Illinois. This seed must always exist in small quantities which can be used to grow the 1,000,000 or more bushels of stock seed that will be needed to plant the general crop for Illinois. This stock seed will be of high grade, but one generation removed and should differ but slightly from the best selected seed. This seed can only be developed by corn specialists, because it requires continued and careful breeding. It will never exist in large quantities because of the close selection to which it should be subjected. This seed then must necessarily be very expensive and the farmer can well afford to pay a high price to get it for breeding purposes. In the breeding of live stock the breeder pays ten times the commercial value of an animal for breeding purposes. How much more profitably then can the farmer afford to pay a high price for highly bred seed corn which has both the male and female parents, and is enormously reproductive, than for a single male or female animal that can produce only a limited number of offspring and requires a mate.

It is very important that the farmer should know the difference between highly bred seed and stock seed. In other words the highly breed seed must be accompanied with evidence as to its breeding in addition to the guarantee of vitality and trueness to variety type that should accompany all seed corn. It is absolutely essential to the farmer that all seed corn be sent to him in the ear because it is impossible to judge the quality from the shelled corn. The corn breeder must study not only the ear, but the stalk, roots, tassel and leaf development. The ear, therefore, is as little evidence of the purity of variety and quality of corn as the farmer should be willing to accept.

The advantage to the farmer from growing his own stock seed. The farmer who is specially interested in corn can well afford to raise his own stock seed, because he can adapt it to his peculiar conditions of soil and climate and select those strains he particularly fancies, in this way producing a superior grade by exceedingly close selection.

How to Breed Corn.

If he desires to raise the very best quality of seed the farmer can pursue the method coming into general use in improving corn, called the plat system, which is as follows:

Buy at least 20 ears of highly bred seed of the variety desired from a corn breeder. For this number of ears select one acre of good land so located that the corn on this field will not be mixed by the pollen of the other varieties. Prepare the seed bed in the same manner as for the ordinary field. Mark off the field in rows the same distance apart as for the ordinary planting. After shelling off the tips and butts of the ears plant each ear in a separate plat about nine hills square. This will necessarily be done by hand planting. This will take but part of the corn and will occupy but one-half the land, which should be in the center of the acre. Now mix together what is left of all the ears and plant the outside of the piece surrounding the platted center, in order to prevent mixture from other varieties. Cultivate this system of plats with the rest of the corn fields. When the ears begin to set on the stalk, go through the field and cut out all of the poor, dwarfed, or barren stalks, so that the pollen from these inferior stalks cannot fertilize the future seed. Husk each plat separately and then examine the ears from each plat. Select for the next year's set of plats seed from those plats having the greatest proportion of ears true to type. The seed which produced this large proportion of typical ears must have prepotency for the production of this type and by selecting seed from this source a rapid improvement will take place. The stock seed for the general crop can then be selected from the rest of the plats rejecting entirely the borders of the field. If this plan does not furnish enough seed corn plant a proportionally larger system of flats.

The vitality of all seed should be tested before planting. Shell off a row of kernels from all questionable ears, mix the shelled corn thoroughly and take out one hundred kernels at random. Fill a common china plate level full of fine sand and lay over the sand two or three layers of coarse cotton cloth. Moisten the cloths and sand thoroughly and lay the kernels of corn on the cloth. Turn an empty plate over the first to prevent too rapid evaporation of the moisture, and set in a warm place. In seven days all of the healthy kernels should sprout. By counting the kernels sprouted and those which have not germinated, the per cent of good seed can easily be estimated.

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